EEB BRANCH REVIEW

DATE: IN 7/29/81 OUT 8/31/81

FILE OR REG. NO. 100-607

PETITION OR EXP. PERMIT NO. 

DATE OF SUBMISSION 7/15/81

RD REQUEST COMPLETION DATE 10/13/81

EEB ESTIMATED COMPLETION DATE 

RD ACTION CODE/TYPE OF REVIEW 330/Amendments - Label Revisions - Food Use.

TYPE PRODUCT(S): I, D, H, F, N, R, S Fungicide

DATA ACCESSION NO(S). No new data

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Ridomil 2E

COMPANY NAME Ciba-Geigy

SUBMISSION PURPOSE Proposed conditional registration of hops use

SHAUGHNESSEY NO. CHEMICAL, & FORMULATION & A.I.

113501

Ridomil 2E 25.11 %

Metalaxyl: N-(2,6-dimethylphenyl) - N - (methoxyacetyl)

Alanine methyl ester
100.0 **Pesticide Use**

The amended registration under consideration is the use of Ridomil® 2E on Hops to control Downy Mildew (*Pseudoperonospora humuli*).

100.1 **Application Method/Directions**

Apply 0.5 lb. a.i. Ridomil 2E per acre in a minimum of 20 gallons of water to the soil surface over the perennial crowns after pruning, but before training. Early applications before shoots are six inches long is preferable. Do not apply after training or make more than one application per year.

100.2 **Application Rate**

Ridomil 2E will be applied once in the spring at the rate of 0.5 lb. a.i. per acre using 20 or more gallons of water.

100.3 **Precautionary Labeling**

The signal word is "DANGER"

Keep out of lakes, streams or ponds. Apply only as specified on this label. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes.

101.0 **Chemical and Physical Properties.**

101.1 **Chemical Name**

$N$-(2,6 - dimethylphenyl)- $N$ -(methoxyacetyl) alanine methyl ester

101.2 **Common Name**

Metalaxyl

101.3 **Structural Formula**

\[
\begin{align*}
\text{C}_6\text{H}_5 & \quad \text{O} \\
\text{C} & \quad \text{C} \quad \text{O} \quad \text{C}_3 \\
\text{C} & \quad \text{C}_2 \quad \text{OCH}_3 \\
\text{O} & \quad \text{C}_3 \\
\end{align*}
\]
101.4 Molecular Weight 279.34

101.5 Physical State
Technical: odorless tan powder or brown solid material
Formulation: brown liquid

101.6 Solubility
Solubility of technical unknown.
Solubility of the formulated product is as follows:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Solubility</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>0.7 %</td>
</tr>
<tr>
<td>methanol</td>
<td>65 %</td>
</tr>
<tr>
<td>benzene</td>
<td>55 %</td>
</tr>
<tr>
<td>hexane</td>
<td>0.9 %</td>
</tr>
<tr>
<td>isopropanol</td>
<td>27 %</td>
</tr>
</tbody>
</table>

102.0 Behavior in the Environment
See the 6-26-81 review for Ridomil.

103.0 Toxicological Properties
See the appended Section 103 taken form the 6-26-81 review.

104.0 Discussion

VEGETATION RESIDUES

Using the maximum application rate of 0.5 lb. a.i. per acre the estimated residues on various substrates are as follows:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>Residue (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves and leafy crops</td>
<td>65 ppm</td>
</tr>
<tr>
<td>long grasses</td>
<td>55 ppm</td>
</tr>
<tr>
<td>short range grasses</td>
<td>120 ppm</td>
</tr>
<tr>
<td>fruit</td>
<td>4 ppm</td>
</tr>
</tbody>
</table>

WILDLIFE UTILIZATION

According to Gusey and Maturgo (Shell Oil Co.), Wildlife Utilization of Croplands (1973), wildlife associated with
hops are; pheasants, quail, songbirds, hawks, owls and morning doves. Not listed but presumed in the area are rodents and other small mammals.

104.1 Likelihood of Exposure to Non-target Organisms.

Exposure to wildlife is likely, however, since metalaxyl is relatively nontoxic to avian and mammalian species, it is unlikely that the relatively small residues will have an adverse effect on wildlife in the area.

Metalaxyl is not expected to enter the aquatic environment.

104.2 Endangered Species Considerations

Since metalaxyl is relatively nontoxic to most species tested and due to the relatively small residues associated with this application rate and technique, there should be little or no hazard to endangered species associated with this use.

107.0 Conclusions

The Ecological Effects Branch has no objection to the conditional registration of Ridomil® 2E for use on hops to control Downy Mildew.

John Tice  
Fish and Wildlife Biologist, Section 4  
8/31/81

Harry Craven  
EEB, Section Head  
8/31/81

Clayton Bushong  
Chief, Ecological Effects Branch  
8/31/81
### 103.2 Birds

<table>
<thead>
<tr>
<th>Organism</th>
<th>Test</th>
<th>Results</th>
<th>% Active</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard duck</td>
<td>acute oral LD$_{50}$</td>
<td>1466 mg/kg</td>
<td>Tech</td>
<td>Core</td>
</tr>
<tr>
<td>Bobwhite quail</td>
<td>8-day dietary LC$_{50}$</td>
<td>$&gt;10,000$ ppm</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>Japanese quail</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Supp.</td>
</tr>
<tr>
<td>Mallard duck</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Core</td>
</tr>
</tbody>
</table>

### 103.3 Fish.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Test</th>
<th>Results</th>
<th>% Active</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carp</td>
<td>96-hr. LC$_{50}$</td>
<td>$&gt;100$ ppm</td>
<td>Tech</td>
<td>Supp.</td>
</tr>
<tr>
<td>catfish</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>bluegill</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>guppy</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>trout</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>bluegill</td>
<td>&quot;</td>
<td>150 mg/l</td>
<td>&quot;</td>
<td>Core</td>
</tr>
<tr>
<td>rainbow trout</td>
<td>&quot;</td>
<td>130 mg/l</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>132 mg/l</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>139 ppm</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>bluegill</td>
<td>&quot;</td>
<td>18.4 ppm</td>
<td>Ridomil 2EG</td>
<td>&quot;</td>
</tr>
<tr>
<td>rainbow trout</td>
<td>&quot;</td>
<td>27.0 ppm</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>bluegill</td>
<td>&quot;</td>
<td>MTC $&gt;9.1$ mg/l</td>
<td>Tech</td>
<td>&quot;</td>
</tr>
<tr>
<td>Fathead minnow</td>
<td>embryo-larvae</td>
<td>MTC $&gt;9.1$ mg/l</td>
<td>Tech</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

* USEPA BELTSVILLE LAB

### 103.4 Aquatic invertebrates

<table>
<thead>
<tr>
<th>Organism</th>
<th>Test</th>
<th>Results</th>
<th>% Active</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daphnia magna</td>
<td>48 hr. EC$_{50}$</td>
<td>29.2 ppm</td>
<td>Tech</td>
<td>Supp.</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>28 mg/l</td>
<td>&quot;</td>
<td>Core</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>121 ppm</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>12.5 ppm</td>
<td>Ridomil 2EG</td>
<td>&quot;</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>invertebrate life-cycle</td>
<td>Adverse response</td>
<td>Tech</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

* USEPA BELTSVILLE LAB
Mammals

(From reviews by K. K. Locke, 10/31/79 and by S.-L. Chan, Toxicology Branch 3/21/79, based in part on previous reviews by W. Woodrow 11/8 & 11/27/78)

Technical (90% A.I.)

Rats - Acute Oral LD₅₀ = 669 mg/kg
Rabbits - Acute Dermal LD₅₀ > 6 gm/kg
Rabbits - Skin Irritation Index = 0.1/8 = mild irritant
Rabbits - Eye Irritation Index = 9.5/110
Guinea pig - Skin Sensitization - Negative
Mouse - Dominant Lethal - Negative Mutagenic Potential

Formulation - CGA-48988 5W

Rats - Acute Oral LD₅₀ >5000 mg/kg; tremors & convulsions
Rabbits - Acute Dermal LD₅₀ >10,000 mg/kg; depression & loss of appetite
Rabbits - Eye Irritation - Unwashed: recovery by day 10 washed: no irritation
Rabbits - Skin Irritation - None
Rats - Acute Inhalation LC₅₀ >2.97 mg/l

Formulation - Ridomil-2E (27.8% AI; contains ____________)

Rats - Acute Oral LD₅₀ = 1889.48 mg/kg
Rabbits - Acute Dermal LD₅₀ = 3571.5 mg/kg
Rabbits - Eye Irritation - Corneal opacity
Rabbits - Skin Irritation - Very slight irritant

Formulation - Ridomil-2EG (27.9% AI; does not contain____________)

Rats - Intraperitoneal LD₅₀ = 312 mg/kg
Rats - Acute Inhalation LC₅₀ - (not determined)